

Channel Mitigation Monitoring Sheets I, II, III, AND IV

Monitoring Data Record

Project Title: K-3800 UT to Maple Branch COE Action ID: SAW 2013-02202
Stream Name: UT to Maple Branch DWR Number: 20130649
City, County and other Location Information: The project is located on the east side of US 17 at the intersection with Harding Road, south of Chocowinity in Beaufort County.
Date Construction Completed: _____ Final Planting: December 10, 2014
Monitoring Year: (2) of 5
Ecoregion: Mid Atlantic Flatwoods 8 digit HUC unit 03020104
USGS Quad Name and Coordinates: NC-Hackney 35.492064, -77.105281

Rosgen Classification: _____

Length of Project: Enhancement of 815 ft. of intermittent stream, preservation of 623 ft. of stream, and 81,457 sq. ft. of buffer. Enhancement Level II

Urban or Rural: Rural Watershed Size: 0.12
Monitoring DATA collected by: M. Green and P. Allen Date: 8-23-16

Applicant Information:

Name: NCDOT Roadside Environmental Unit
Address: 1425 Rock Quarry Road Raleigh, NC 27610
Telephone Number: (919) 861-3772 Email address: mlgreen@ncdot.gov

Consultant Information:

Name: _____
Address: _____
Telephone Number: _____ Email address: _____

Project Status: Complete

Monitoring Level required by COE and DWR (404 permit/ 401 Cert.): Level

Mitigation Plan states: NCDOT shall monitor the restoration site by visual observation and photo points for survival and aerial cover of vegetation. NCDOT shall monitor the site for a minimum of three years or until the site is deemed successful. Monitoring will be initiated upon completion of the site planting.

NCDWR Permit states: The permittee shall monitor the stream and buffer mitigation site. Monitoring shall consist of visual review and viable stem counts. An annual report shall be submitted to NCDWR for a period of 5 years showing monitoring results including: bank stability, survival rate/success of tree and vegetation establishment, and that diffuse flow through the riparian buffer has been maintained. The first annual report shall be submitted within one year of final planting. Failure to achieve a buffer density of 115 trees per acre after 5 years will require the annual report to provide appropriate remedial actions to be implemented and a schedule for implementation. Approval of the final annual report, and a formal "close out" of the mitigation site by NCDWR is required.

Section 1. PHOTO REFERENCE SITES

(Monitoring at all levels must complete this section)

Total number of reference photo locations at this site: A total of 11 photos were taken. 8 photos were taken at 4 photo point locations and 3 additional overview photos.

Dates reference photos have been taken at this site: 8-12-15, 8-23-16

Individual from whom additional photos can be obtained (name, address, phone):_____

Other Information relative to site photo reference: A site map is included with this report showing the photo point locations.

Section 2. PLANT SURVIVAL

Attach plan sheet indicating reference photos.

Identify specific problem areas (missing, stressed, damaged or dead plantings):

Estimated causes, and proposed/required remedial action:_____

ADDITIONAL COMMENTS: NCDOT completed planting this site in December 2014 with silky dogwood and buttonbush live stakes along the streambank and cherrybark oak, green ash, sycamore, and willow oak containerized trees within the buffer restoration area. Plant survival counts of Areas A, B, and C were conducted during August 2016 monitoring evaluation with the results showing an average density of 138 trees per acre, which is above the success criteria of 115 trees per acre after the second year of monitoring. Other species noted on site included fennel, elderberry, poplar, sweetgum, goldenrod, pokeberry, red maple, briars, mimosa, grape vine, and various grasses. The approved Vegetation Management Plan and Site Plan are attached to this report for future reference. NCDOT proposes to continue plant survival monitoring at this site in 2017.

If required to complete Level 1 and Level 2 monitoring only stop here; otherwise, complete section 3.

Area	Cherrybark Oak	Green Ash	Sycamore	Willow Oak	Total (Year 2)	Total (at planting)	Density (Trees/Acre)
A	121				121	121	138
B	51				51	51	138
C	86				86	86	138
Year 2 Average Density (Trees/Acre)							138
Year 1 Average Density (Trees/Acre)							138

Section 3. CHANNEL STABILITY

Visual Inspection: The entire stream project as well as each in-stream structure and bank stabilization/revetment structure must be evaluated and problems addressed.

Report on the visual inspection of channel stability. Physical measurements of channel stability/morphology will not be required. Include a discussion of any deviations from as-built and an evaluation of the significance of these deviations and whether they are indicative of a stabilizing or destabilizing situation.

The UT to Maple Branch onsite stream mitigation is stable for the Year 2 evaluation. No instability was noted along the stream. NCDOT will continue to monitor channel stability at the UT to Maple Branch Mitigation Site in 2017.

Date Inspected	Station Number	Station Number	Station Number	Station Number	Station Number
Structure Type					
Is water piping through or around structure?					
Head cut or down cut present?					
Bank or scour erosion present?					
Other problems noted?					

Section 4. DEBIT LEDGER

The entire UT to Maple Branch stream mitigation site was used for the K-3800 project to compensate for unavoidable stream impacts.

UT to Maple Branch Mitigation Site



PP #1 Upstream



PP#1 Downstream



PP #2 Upstream



PP #2 Downstream



PP #3 Upstream



PP #3 Downstream

August 2016

UT to Maple Branch Mitigation Site



PP #4 Upstream



PP #4 Downstream



Overview photo looking at Area A



Overview photo looking at Area B



Overview photo looking at Area C

August 2016

K-3800 Beaufort County Rest Area

NCDOT is requesting a revision to the scheduled maintenance for Areas “A” and “B” as depicted on the attached map and in the attached maintenance schedule.

Total buffer mitigation proposed	81,457.2 ft ² .
Total buffer impacts	22,226 ft ² .
Buffer mitigation currently debited to cover impacts	52,742 ft ² .
Buffer mitigation remaining	28,715.2 ft ² .

As part of our request, NCDOT is proposing to allot the remaining buffer mitigation to this project.

A total of 81,457.2 ft² of planted buffer mitigation is being offered to offset the 22,226 ft² of farm field buffer impacts.

The maintenance schedule for Area “C” will remain as originally proposed.

It was determined during discussions with DWR that the planting density associated with the buffer mitigation plan was sufficient for this site.

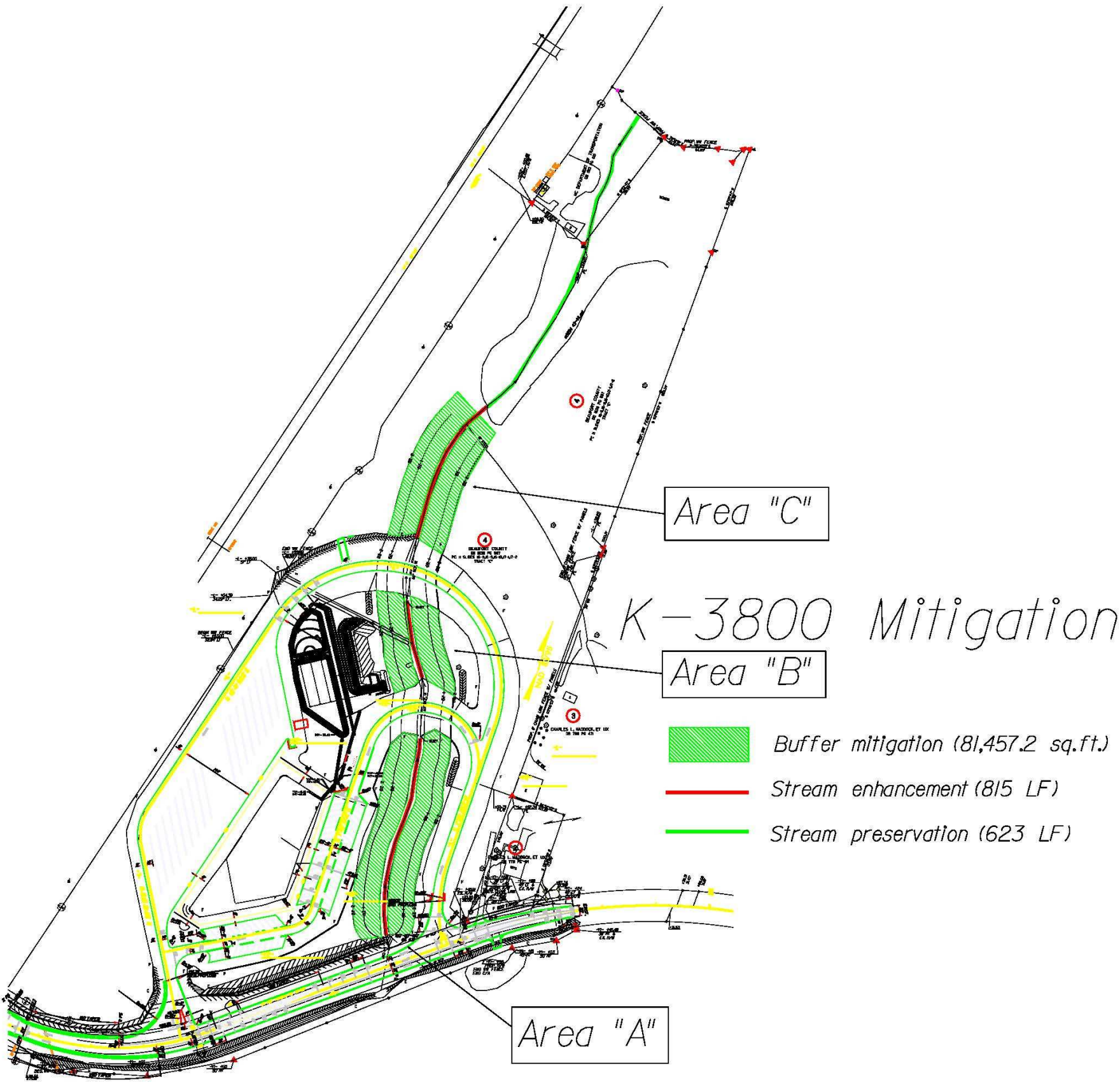
This planting density is currently 115 trees/acre. The trees that were planted in this buffer area were 3 gallon containerized material.

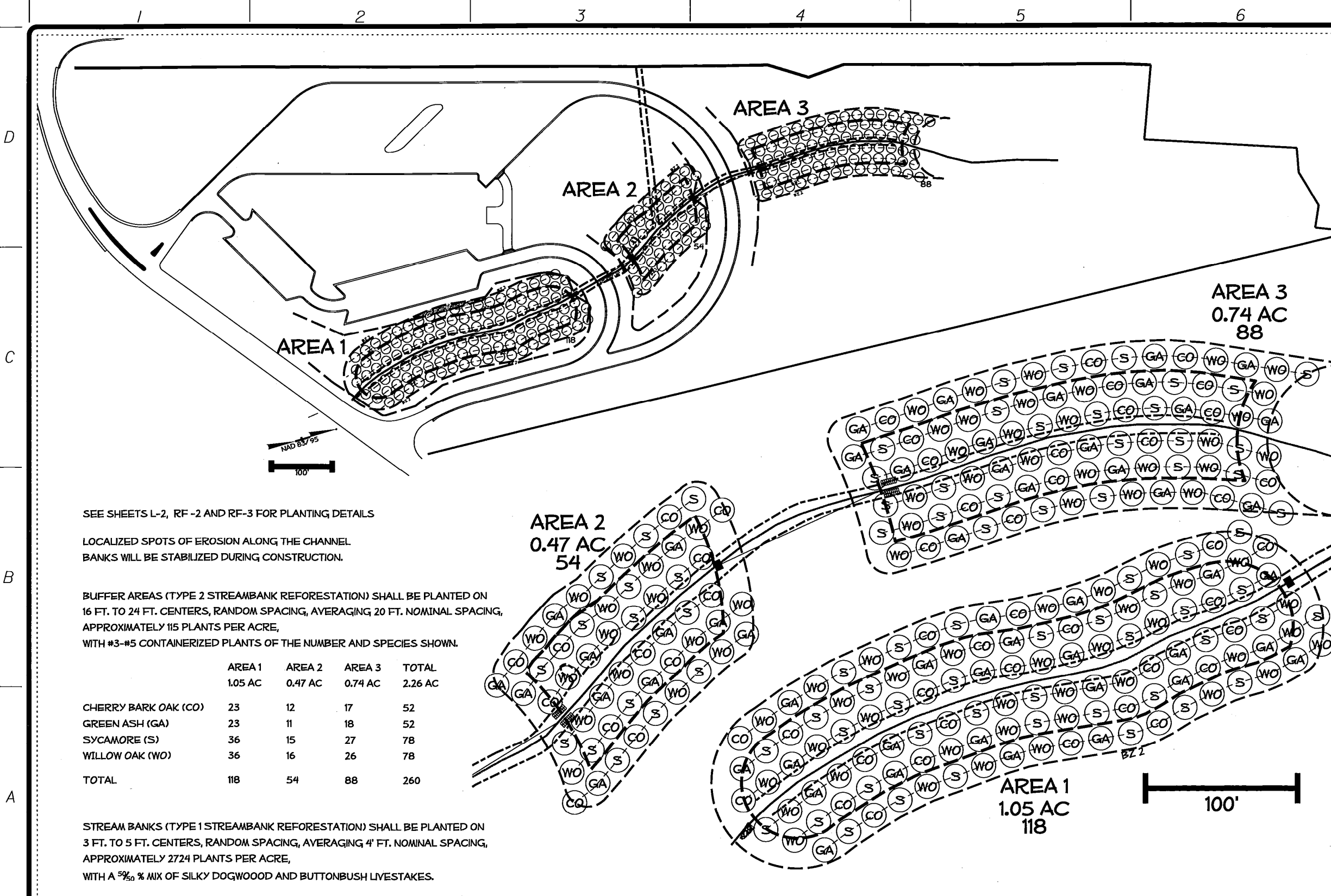
Success criteria for planting densities for this site will be adjusted to reflect this change in planting density. NCDOT proposes that the site meets vegetation success criteria if 115 trees/acre are surviving after 5 years.

Exhibit 1. K-3800 Beaufort Co Rest Area Vegetation Management Plan

	Vegetation Type	Maintenance		
		Method	Frequency	Time of Year
Areas A and B (The first 10' from top of bank will be left undisturbed)	Live Stakes	Prune by hand of plants \geq 3 ft	Once/yr.. Start two full years after planting.	Late fall.
	Grasses	Mechanically with mower and/or by hand with a string trimmer; 6" hgt.	3 times/yr.	April, July, and November
	Trees	Prune by hand dead wood	Once/yr. Start one full year after planting.	Late fall.
		Replacement of deficient stakes and wires.	As needed.	During first year.
		Removal of stakes and wires.	N/A	Mandatory after one full year.
		Removal of all dead or diseased vegetation considered 'beyond treatment'.	As needed.	N/A
Area C	Live Stakes	Follow original mitigation plan		
	Grasses	Follow original mitigation plan		
	Trees	Follow original mitigation plan		

Exhibit 2. K-3800 Beaufort Co Rest Area Mitigation Site Plan





SEE SHEETS L-2, RF -2 AND RF-3 FOR PLANTING DETAILS

LOCALIZED SPOTS OF EROSION ALONG THE CHANNEL BANKS WILL BE STABILIZED DURING CONSTRUCTION.

BUFFER AREAS (TYPE 2 STREAMBANK REFORESTATION) SHALL BE PLANTED ON 16 FT. TO 24 FT. CENTERS, RANDOM SPACING, AVERAGING 20 FT. NOMINAL SPACING, APPROXIMATELY 115 PLANTS PER ACRE, WITH #3-#5 CONTAINERIZED PLANTS OF THE NUMBER AND SPECIES SHOWN.

	AREA 1 1.05 AC	AREA 2 0.47 AC	AREA 3 0.74 AC	TOTAL 2.26 AC
CHERRY BARK OAK (CO)	23	12	17	52
GREEN ASH (GA)	23	11	18	52
SYCAMORE (S)	36	15	27	78
WILLOW OAK (WO)	36	16	26	78
TOTAL	118	54	88	260

STREAM BANKS (TYPE 1 STREAMBANK REFORESTATION) SHALL BE PLANTED ON 3 FT. TO 5 FT. CENTERS, RANDOM SPACING, AVERAGING 4' FT. NOMINAL SPACING, APPROXIMATELY 2724 PLANTS PER ACRE, WITH A 50% MIX OF SILKY DOGWOOD AND BUTTONBUSH LIVESTAKES.

STATE # 3874811
F.I.P. # K-3800
FED. PROJ. # 85-02-000000



LANDSCAPE DESIGN & DEVELOPMENT SECTION
NCDOT ROADSIDE ENVIRONMENTAL UNIT
1557 MAIL SERVICE CENTER
RALEIGH NC 27699 919-707-2920

PLAN : Stream Buffer Reforestation
PROJECT DESCRIPTION : US 17, Beaufort County, Rest Area

DESIGNED BY: dlw
DRAWN BY: dlw
DATE: 05/28/13
SCALE: as shown
SHEET # OF

*****SYSTEM*****
*****USER*****

